

**Abstract**

The present invention discloses a process for hydroconverting a heavy hydrocarbon chargestock, wherein said chargestock oil is first contacted with a highly active homogeneous hydrogenation catalyst to effect the hydrogenation reaction so that macromolecular radicals of the residue (the precursor of coke) form as less as possible, thereby decreasing the output of coke in the hydrocracking of the residue; when the reaction proceeds to a certain extent, a solid powder is added to adsorb the macromolecular radicals of the residue formed during the reaction and lower their reaction activity, thereby preventing them from further condensing to coke and/or depositing due to polymerization. The synergetic action of the two sorts of substances makes it possible to produce substantively no coke or less coke during the hydrogenation of residue in a suspension bed and prolong the operation lifetime of the unit.